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THE HORN SPEAKER

RADIO BROADCAST MAGAZINE, September 1922

SWAN ISLAND IN THE CARIBBEAN SEA

The History of the Development of the United Fruit Company's Radio Telegraph System

By ROY MASON

The story of how the United Fruit Company built up its big radio telegraph system has never before been told. Through the courtesy of the Company's officials, RADIO BROADCAST is enabled to give it to the public for the first time.—THE EDITORS.

THE story of what the United Fruit Company has accomplished in developing its system of radio communication, the installation of which was begun in 1904, is the history of the development of the radio art in the United States since that date. This American company, which is the greatest agricultural, as well as one of the largest steamship enterprises in the world, has shown an initiative and progressiveness in developing this system which is unparalleled in the commercial radio art.

Its steamships, comprising the "Great White Fleet," are built especially for service in tropical waters, and furnish regular passenger, mail, and freight service between the Atlantic and Gulf ports of the United States and Cuba, Jamaica and the Atlantic ports of Central America and Colombia, and, through the connecting lines at the Panama Canal, with the west coast ports of Central and South America.

In 1904, the entire eastern coast of Central America and the northern coast of Colombia, South America, were without any direct means of communication with the United States, with the single exception of a cable station at Colon, Panama. The route which messages from the United States for Central America had to follow up to that time, was by cable through Galveston, Texas, across Mexico and down the west coast of Central America to San Juan del Sur, Nicaragua, and thence via government owned and operated land wires to points of destination. These land lines—traversing as they did swamps and jungles, and being subject to the usual adverse conditions encountered in certain parts of this tropical section, with its torrential downpours and consequent washouts and floods,—made it extremely difficult, and in a great many cases impossible, to maintain a constant and thoroughly reliable telegraphic service. As a consequence, messages to some parts of this territory were subject to delays of hours and often days.

Dealing as it does in such a perishable product as the banana, and directing the movement of a large number of steamships at tropical ports, the United Fruit Company has always been dependent upon quick, reliable telegraphic and telephonic communication, not only between its offices in the United States and Central America, but between its various banana plantations and division headquarters in the tropics. Therefore, delays to its messages, or inability to send them at all, were of most serious consequence.

In 1904 the Company had already established its own telegraph and telephone lines between its banana plantations and division headquarters in the individual countries of Central America, and was expanding this system to connect the division headquarters of each country.

That year the late Mr. Mack Musgrave, who was in charge of the Company's telegraph and telephone service in Costa Rica, was instructed to make a trip overland between Port Limon and Bocas del Toro, to report on the practicability of constructing a telegraph and telephone line between the headquarters of its Costa Rica Division at Port Limon and the headquarters of its Panama Division at Bocas del Toro, a distance overland of about 150 miles and by sea of about 75 miles. At this time the only means of "quick" (?) communication with Bocas del Toro was by means of canoe from Port Limon. Messages from the Company's offices in the United States for Bocas del Toro were telegraphed to Galveston, Texas, and then cabled to San Juan del Sur, Nicaragua, where they were given to the Nicaraguan Government land lines, which in turn transferred them at the border to the Costa Rican Government land lines for transmission to the Company's office at Port Limon. These messages were then entrusted to natives, who would make the trip in a canoe on the open sea between Port Limon and Bocas del Toro in from 30 to 60 hours, depending upon weather conditions. This canoe service, although it served a purpose, was not only expensive ($25.00 gold for the trip) but was unsatisfactory, as in many instances messages sent to advise the manager at Bocas del Toro of the expected time of arrival of a steamship, or of delays to steamships en route to that port, would not be received until after the bananas had been cut, and in many cases not until after the arrival of the steamship to which the message referred. As a result, whole trainloads of bananas, cut and transported to the seaboard on the assumption that a steamship would arrive at least within twelve hours of scheduled time, would necessarily be left

on sidings or in the freight yards, where they would soon spoil.

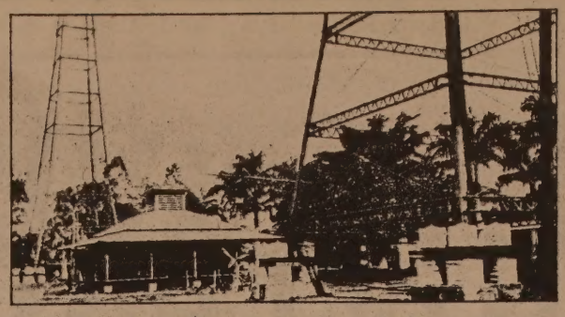
Or again, a steamship would arrive without the Company's manager having received the message apprising him of her expected arrival, and it would then be necessary to hold her in port until the bananas could be cut and transported to seaboard. These same conditions were true to a greater or less extent at other of the Company's tropical division points.

The establishment of a means of quick communication with the Company's tropical divisions, and particularly with the rapidly growing Panama division, was, therefore, of paramount importance, and the Company was prepared to go to almost any expense to insure against undue delays to its messages, which so seriously affected its principal business of growing and transporting bananas to the United States and Europe.

After making the overland trip from Port Limon to Bocas del Toro, Mr. Musgrave reported that, on account of the numerous rivers and swamps to be crossed and the character of the country in general, it was his judgment that wire telegraph or telephone lines could be constructed only with great difficulty and that on account of floods and washouts, the service which could be maintained over such a line, were it established, would be subject to frequent interruption. He therefore suggested the establishment of radio stations at Port Limon and Bocas del Toro, which recommendation was adopted, and he was instructed to proceed to the United States and purchase the necessary equipment.

This was shortly after the International Yacht Races off Sandy Hook between the *Reliance* and the *Shamrock III* had been successfully reported by radio by the original American De Forest Wireless Company, later known as the United Wireless Telegraph Company. Mr. Musgrave purchased from the former company the transmitting and receiving sets for the stations at Port Limon and Bocas del Toro. The apparatus purchased for the latter station was the selfsame set used in reporting the International Yacht Races. It was installed at Bocas del Toro in 1904, and the transmitter continued in operation as a "standby" until 1921, the engine and generator of this set being still in service at Almirante, Panama, as auxiliaries to other power equipment.

The radio service between Port Limon and Bocas del Toro was inaugurated early in 1905, and was the first to be established in Central or South America. There being no other means of telegraphic communication with Bocas del Toro, that station handled not only all telegraphic business of the United Fruit Company, but that of the general public as well, until 1921, when the station was moved to Almirante, Panama, a few miles away, where the Company had established its new divisional headquarters. Messages for the general public at Bocas del Toro are now handled via Almirante, and thence by telephone.



RADIO STATION AT PORT LIMON
Headquarters of the United Fruit Company's Costa Rican Division

The original Bocas del Toro station consisted of one 200-foot self-supporting steel tower and umbrella antenna, and a combined dwelling and operating house, all situated on a hill overlooking Almirante Bay.

The Port Limon station comprised two 200-foot self-supporting steel towers having a span of 200 feet, an inverted L antenna, a power house and an operating house, all erected on the seaboard. The towers and engines are still in use, but in 1912 the original transmitting apparatus was replaced by a Fessenden 5 K. W. 500 cycle rotary synchronous spark transmitter. Steel towers 200 feet in height were a distinct departure from the wooden masts of from 125 feet to 185 feet in height, which carried the antenna at the majority of coast stations in those days.

The receiving apparatus at both stations has been changed from time to time as the radio art advanced. The original receivers were of the De Forest two and three slide tuner types, having as detectors the old "goo" responder, and later the electrolytic of both the Fessenden and Shoemaker types, which were subsequently replaced by the Pickard crystal detectors.

These first radio stations of the United Fruit Company were installed under the direct supervision of Mr. Henry O. Easton, who will be remembered by the pioneers in radio as one of the first installers and operators employed by the old American De Forest Wireless Company. Mr. Easton is still with the Company as Superintendent of its tropical stations, and is also Division Superintendent at New Orleans of the Tropical Radio Telegraph Company.

The operation of these two stations convinced the Directors of the United Fruit Company that, regardless of the many imperfections in radio apparatus, and notwithstanding the static and other conditions, which made the operation of radio stations in the tropics in those days extremely difficult, radio communication would be practicable and would ultimately prove extremely valuable in the handling of such a highly perishable product as the banana.

BOCAS DEL TORO, PANAMA
Where the United Fruit Company established the first radio station in Central America. Until 1904 all messages for this point had to be carried by canoe on the open sea from Port Limon. The trip took from 30 to 60 hours

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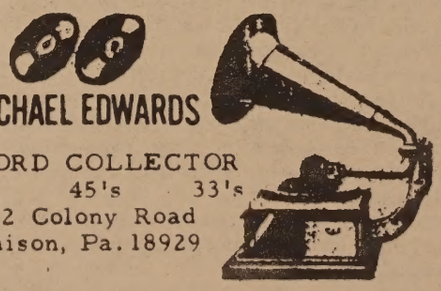

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.15	.35	.46	.60
.22	.40	.53	.75
.33	.49	.69	.96
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.033	.27	.27	.29
.047	.24	.29	.34
.068	.27	.32	.39
.082	.29	.32	
.1	.29	.32	.45
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book review

**

70 YEARS OF RADIO TUBES AND VALVES

-- a guide for electronic engineers, historians and collectors

by John Stokes

The entire electronics industry was founded on radio's "magic lamp" -- the radio tube or valve in British parlance. From its invention in 1904 to its gradual eclipse beginning in the 1960's as it was replaced by solid state devices, the electron tube reigned supreme as the cornerstone of the electronics industry.

In this new book the history of the radio tube is coverd entirely, with emphasis on developments occurring between 1927 and 1937 -- the period when the all electric receiver evolved to become a familiar part of our daily lives.

Mr. Stokes, a New Zealand native, has been a student of tubes and valves for many years and he gives equal treatment to developments throughout the Western World. With over 430 pictures, drawings and early advertisements, the book is a treat for anyone involved in electronics to see and read how this now giant industry which permeates every aspect of today's existence grew together with inventions in the field of tubes.

all the giants of the industry-- Westinghouse, General Electric, Sylvania. R.C.A., Raytheon and others their size were involved, as were many smallere firms-- a lot of them forgotten today, as if awaiting a book like this to revive their memories for anyone who enjoys studying how our modern technical civilization has progressed. The story is thorough, from Edison's discovery that electrons would flow in a vacuum (the famed 'Edison's effect') to Lee DeForest's invention of the grid and to R.C.A.'s nuvistor that closed the era.

With an estimated 8,000 antique radio buffs in the U.S.A. alone, together with some 200,000 ham radio operators, there's an enormous interest in old radio today. Mr. Stokes' book is intended to serve this market, as well as today's electronic engineers who wish to learn more about the rich heritage of their industry.

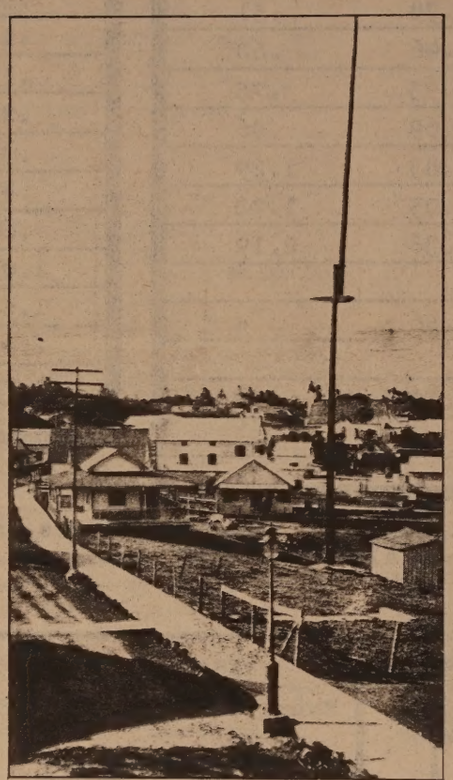
Interested? Write Vestal Press Ltd., P. O. Box 97, Vestal, NY 13850 for more information.

The United Fruit Company's Radio Telegraph System

These two stations, while representing the best in radio equipment at that time, were far from perfect. Static, always much more severe in the tropics than elsewhere in the world, caused untold annoyance and often heart-breaking delays. However, the directors of the United Fruit Company did not lose their confidence in the commercial application of this new science, and, a year later, in 1906, authorized the construction of radio stations at Bluefields and Rama, Nicaragua, neither of which had telegraphic service sufficiently reliable to serve the purpose of the Company. These stations were erected and placed in operation that year, and handled not only all of the Company's telegraphic business but also approximately 90% of that of the general public between those places and the United States and Europe.

THE RADIO STATION AT BLUEFIELDS, NICARAGUA

Erected in 1906, and still handling the bulk of the telegraphic business of the general public between that point and the United States and Europe



The Bluefields station is still in operation, and is handling the bulk of the telegraphic business of the general public between Bluefields, the United States and Europe. Bluefields is also now connected by government operated land wires with Managua, the capital of Nicaragua, which gives it a cable outlet to the outside world. The Rama station, situated on the Escondido River, about forty miles above Bluefields, was abandoned when the Company discontinued its banana producing and exporting activities in Nicaragua.

Up to 1907 all of the United Fruit Company's radio communication had been confined to these four original stations at Port Limon, Bocas del Toro, Bluefields and Rama. However, as a result of the experience with these stations and the need for quicker and better communication facilities between the United States and the east coast of Central America, Mr. Andrew W. Preston, President and Mr. Minor C. Keith, Vice President of the Company, decided that not only the interests of the Company but those of the United States demanded that improved communication facilities be established, and that radio should be the means. Their ambition, voiced at that time and now all but accomplished, was to connect all the republics of Central America and Colombia, South America, by radio communication with the United States, either direct or by relay, so as to give hourly communication. The Company had demonstrated that radio communication was not only a useful adjunct to its tropical divisions, but to its steamship service as well. The Board of Directors accordingly authorized the equipment of the Company's steamships with radio apparatus of the very latest type.

It was planned that the United States terminal of this radio system should be at New Orleans and that a relay station be established on Swan Island. Accordingly, in 1907, the Company purchased from the United Wireless Telegraph Company their station at New Orleans, which was to be enlarged, and also their station at Burrwood, La., at the mouth (southwest pass) of the Mississippi River, about ninety miles south of New Orleans. This latter station was to be used principally for communicating with ships at sea, leaving the New Orleans station free for long distance work.

Mailbox

The committee for Radiofest '82 would like to thank The HORN SPEAKER for the coverage given on event held August 7th in Elgin, Illinois. We feel the coverage substantially help make Radiofest '82 the great success it was.

Sincerely,
The Committee for
Radiofest '82
Joe Willis, Barry
Janov, Randy Renne
and Nate Alexander

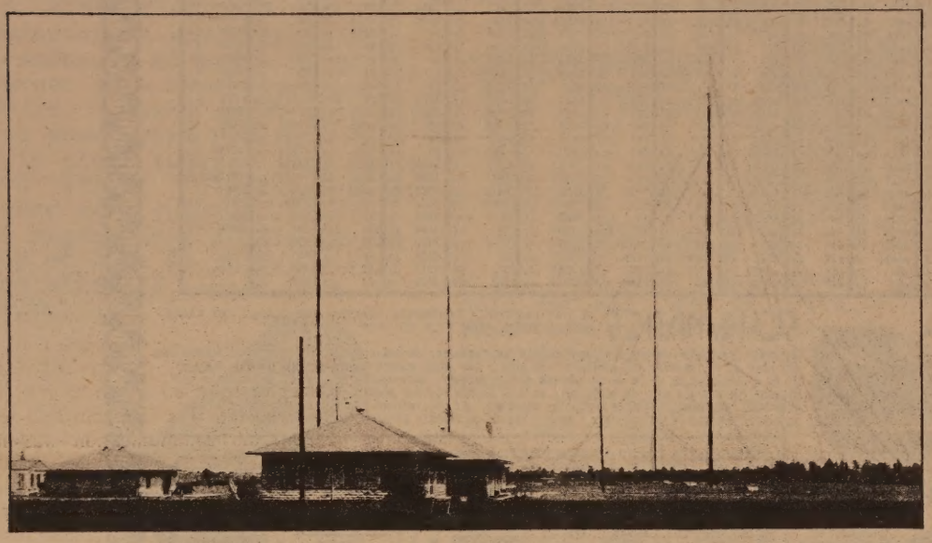
club news

A. W. A. - V. R. P. S. MEET

The Antique Wireless Association and the Vintage Radio and Phonograph Society will hold a Meet together on November 12 to 14, 1982 in the Dallas Texas area to feature a technical session on restoration techniques with working demonstrations, an equipment contest, an auction and an awards banquet at which Mr. Charles Brelsford, K2WW and A. W. A. president, is scheduled to be the guest speaker.

Sound interesting? Then write V. R. P. S., P. O. Box 5345, Irving, Texas 75062 or to telephone you might call Mr. John Ganster at (214) 530-1215.

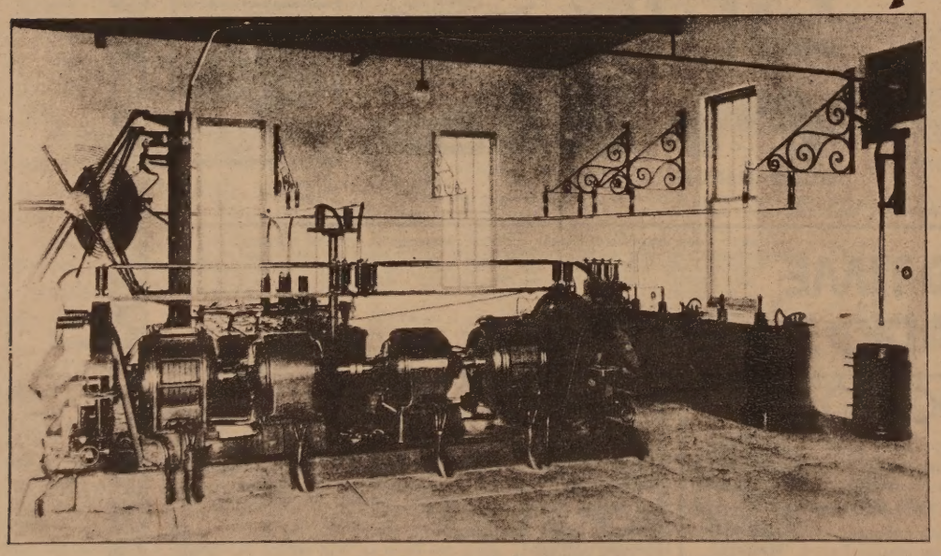
The United Fruit Company's Radio Telegraph System



THE NEW ORLEANS RADIO STATION

Showing its store house, operating house, generator house, and four 320-foot tubular steel masts

In 1907 Mr. Musgrave again came to New York, and got in touch with Mr. Harry Shoemaker, then Chief Engineer of the International Telegraph Construction Company, and purchased from him a 10 K. W., 60-cycle spark apparatus for installation at Swan Island. Only a few stations were equipped at that time with transmitting apparatus of more than 5 K. W. power, and the design and manufacture of a 10 K. W. set was therefore a special undertaking. Mr. Musgrave also purchased additional equipment for the Port Limon station to increase its power. Two 200-foot self-supporting steel towers were also purchased for Swan Island and likewise for New Orleans.



The generator room of the New Orleans Radio Station, showing two 40 K. W. units

Swan Island, which had been selected as the relay point, is an island about one mile wide and two miles long in the Caribbean Sea about nine hundred miles south of New Orleans and ninety miles northwest of Honduras. It has no harbor, and the average ship cannot come closer than within one-half mile of the beach, while the larger ships must lay off nearly a mile. In the days of the Spanish Main, it was the headquarters of a group of buccaneers who ravaged the Central American coast, and there are yet evidences of their occupation of the Island. At the time of the establishment of the Company's radio station there, its only inhabitants were a Captain Adams and a few Grand Cayman laborers, who were shipping phosphate and growing cocoanuts for the Swan Island Commercial Company, an American company which owned the island. It is one of the most beautiful little spots in the Caribbean Sea, enjoying an even temperature the year round.

As ships stopped at Swan Island only at irregular intervals, several months apart, and as everything had to be transported in rowboats on the open sea between the ship and the beach, the construction of the radio station presented many difficulties, particularly in the handling of the tower steel, oil storage tanks and the heavy engines and generators. It was therefore impracticable to ship materials piecemeal. A ship was accordingly chartered and everything necessary for the construction of the station was loaded and shipped at one time, accompanied by a construction gang. The erection of the plant required about eight months and it was placed in operation during the latter part of 1907. Only one man was stationed there at this time.

In those days radio communication was largely a matter of cut and try. Radio engineers and scientists, of whom there were then only a very few, had not yet acquired the experience nor worked out the formulæ under which modern radio stations are constructed. They knew something of static, but had only a more or less vague idea of its tremendous volume and long duration in the tropics.

It was found that, while under favorable atmospheric conditions, the Swan Island station could communicate with both New Orleans and Port Limon, at certain seasons of the year, during the period of static (which prevails nine months out of the year and which is particularly strong on the longer wave lengths in the tropics) spark apparatus of the only type then available of 10 K. W. power was insufficient to maintain communication with New Orleans. The Swan Island station, however, was worth the effort and proved its value on many occasions.

Radical improvements came almost overnight in those days, and it was realized that the spark apparatus of the type so recently installed at both Swan Island and New Orleans would soon be obsolete. While the Company's ambition for uninterrupted and reliable communication between the United States and Central America had not yet been realized, the tests then being conducted by Professor Reginald A. Fessenden between Brant Rock, Massachusetts, and Machrihanish, Scotland, with his 500-cycle rotary synchronous spark sets, lent every encouragement. The 500-cycle note of the Fessenden transmitters came through the static much more readily than the 60-cycle note of the apparatus then installed at the Company's stations. Signals received at Swan Island and Port Limon from Brant Rock were of such a fine tonal quality and were so strong that it was apparent to the Company that a decided improvement could be made in their radio service by installing similar apparatus.

continued

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0Z4	$6	1LA4	$7	2X2	$5	6AC5	$5	6C5	$5	6L7	$7	6T8	$4	7E6	$7	12AV7	$4	14A5	$6
1A3	$6	1LA6	$7	3A4	$6	6AC7	$7	6C6	$8	6N5	$15	6U5	$18	7E7	$7	12B7	$7	14A7	$7
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1D5	$7	1N6	$6	5AZ4	$9	6AH5	$5	6E8	$7	6SB7	$7	6Z7	$6	7S7	$8	12K8	$7	14H7	$7
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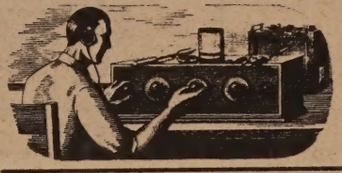
1D8	$7	1Q5	$6	5T4	$6	6AK5	$4	6F6	$7	6SD7	$5	7A4	$7	7W7	$6	12Q7	$6	14N7	$7
1E4	$6	1R4	$6	5U4	$4	6AL5	$5	6F7	$8	6SE7	$5	7A5	$5	7X6	$7	12SA7	$6	14Q7	$9
1E5	$6	1R5	$3	5V4	$6	6AL7	$12	6F8	$5	6SF5	$5	7A6	$7	7X7	$8	12SB7	$9	14R7	$6
1E7	$6	1S4	$4	5W4	$6	6AQ5	$4	6G5	$18	6SF7	$5	7A7	$7	7Y4	$7	12SC7	$7	14W7	$6
1F4	$6	1S5	$5	5X4	$6	6AQ7	$5	6G6	$5	6SG7	$7	7A8	$7	7Z4	$7	12SF5	$5	14X7	$7
1F5	$6	1T4	$6	5Y3	$5	6AT6	$5	6H4	$5	6SH7	$6	7AD7	$6	10	$9	12SF7	$5	15	$12
1F6	$6	1T5	$6	5Y4	$6	6AT8	$4	6H6	$4	6SJ7	$6	7AE7	$6	12	$10	12SG7	$7	19	$8
1F7	$6	1U4	$6	5Z3	$6	6AU6	$3	6J4	$5	6SK7	$6	7AF7	$9	12A5	$7	12SH7	$5	19T8	$3
1G4	$6	1U5	$6	5Z4	$6	6AV6	$4	6J5	$9	6SL7	$5	7AG7	$6	12A6	$7	12SJ7	$6	20	$12
1G5	$6	1V	$7	6A3	$7	6B4	$7	6J6	$3	6SN7	$3	7AH7	$6	12A7	$8	12SK7	$6	22	$9
1G6	$6	2A3	$12	6A4	$8	6B5	$8	6J7	$7	6SQ7	$6	7B4	$7	12A8	$7	12SL7	$6	24A	$9

36	$9	59	$10	1201	$6				
37	$7	70A7	$7	1203	$6				
38	$6	70L7	$9	1231	$6				
39	$6	71A	$12	1232	$10				
40	$10	75	$9	1273	$6				
4025	$5	76	$5	1274	$6				
41	$7	77	$7	1282	$6				
42	$7	78	$9	1291	$6				
43	$9	79	$7	1294	$6				
44	$6	80	$6	1629	$12				
45	$14	81	$10	1852	$7				
4523	$3	82	$8	1853	$7				
4525	$4	83	$8	5881	$9				
46	$6	83V	$8	6146	$7				
47	$14	84	$6	9001	$6				
48	$10	85	$7	9002	$6				
49	$9	89	$7	9003	$6				
50	$15	117L7	$10	9006	$7				
50A5	$7	117M7	$10	VR75	$4				
50B5	$5	117N7	$9	VR90	$4				
50C5	$4	117P7	$9	VR105	$5				
50C6	$8	11723	$7	VR150	$5				
50L6	$6	11724	$7	VT-52	$8				
50X6	$7	11726	$7	FM1000	$15				
50Y6	$7	485	$9	XXB	$7				
50Y7	$7	717A	$12	XXD	$7				
51	$9	879	$5	XXL	$7				
53	$14	884	$9	XXFM	$8				
55	$10	950	$9						
56	$6	951	$9						
57	$7	955	$8						
58	$8	958	$8						



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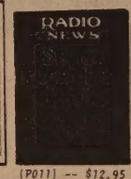

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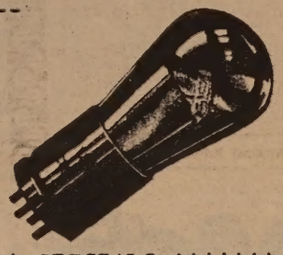

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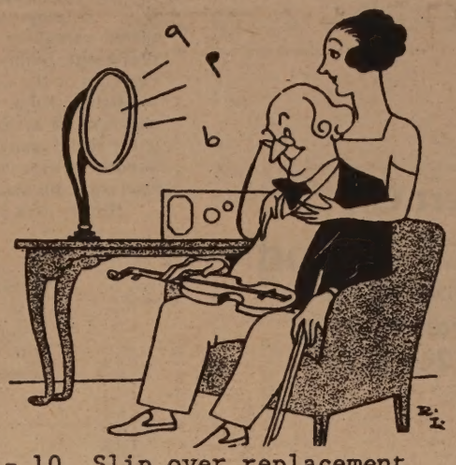

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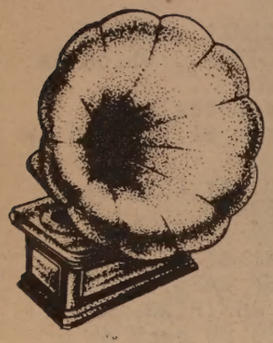
AUCTION November 19 • 20

Opelika, Alabama

The John Herbert Orr Collection brings back to life the faded sounds of yesteryear. Edison reciting "Mary had a little lamb," Caruso sobbing through Pagliacci, Rudy Valley bidding "Hi Ho Everybody," and the Kingfish saying "Buzz me Miss Blue." It brings back the memories of cold winter nights and shared earphones while the dials of the Atwater Kent were tuned with Jimmy Valentine precision to bring in KDKA from Pittsburg or the First Nighter program from WEAF sponsored by Italian Balm. If you were a teen in the thirties, then memories of winding up the Victrola and putting on a record in the church parish hall for the modest dances of that era, will flood back with the sight of the Victor machines, with the pup listening to his master's voice on the logo inside the cover.

History lives on in the John Herbert Orr Collection.



J. Herbert Orr
Museum of Sound
1203 Crawford Road
Opelika, Alabama 36801
Phone 205/749-8261

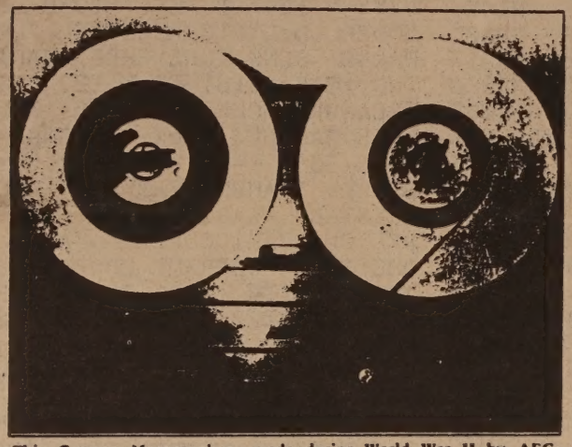
The oldest Edison machine on display is the famous Gem cylinder unit produced in 1901. This series started in 1898 and continued with various improvements until 1908. The compact model shown played four-minute brown wax cylinders and had a better spring motor, a stop-start regulating device and a knob that controlled the governor speed or could be moved in or out for braking.

This collection, which has been appraised and declared the world's largest by no less an authority than Oliver Read, includes over 600 individual items from the Edison Gem cylinder phonograph to Rangertone =64, a post World War II American-made professional tape recorder.

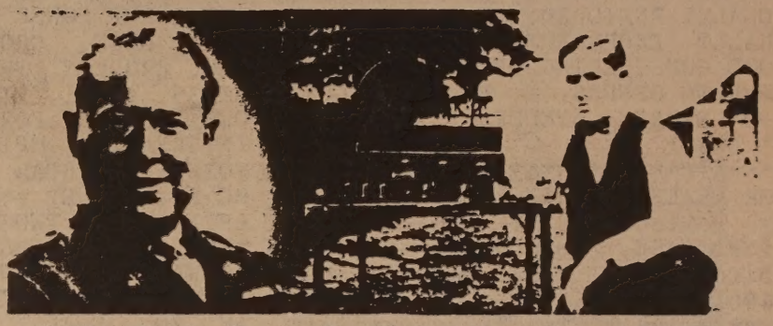
A review of Oliver Read's latest edition, *From Tinfoil to Stereo*, reveals the broad range of antique phonographs that are in the Orr collection, since Read meticulously lists just about every development in the evolution of sound recording devices.

As told to Joe Roizen

NOVEMBER 18, 1972, BILLBOARD



This German Magnetophon, made during World War II by AEG-Telefunken, used ¼" tape running at 30 ips. There were no hubs on the reels and maximum playing time was 22 minutes. Three of these machines were captured at Radio Luxembourg after D-day. These war souvenirs served as the basis for US manufacture of the Ampex and Rangertone audio recorders.



(Left) Major Orr when he was radio engineering officer on General Eisenhower's staff at Supreme Headquarters, Allied Expeditionary Forces, during World War II at the time he first came into contact with magnetic tape. (Right) J. Herbert Orr as a teenager with radio receiver he built. Background setting is Alabama farm where he spent his childhood.

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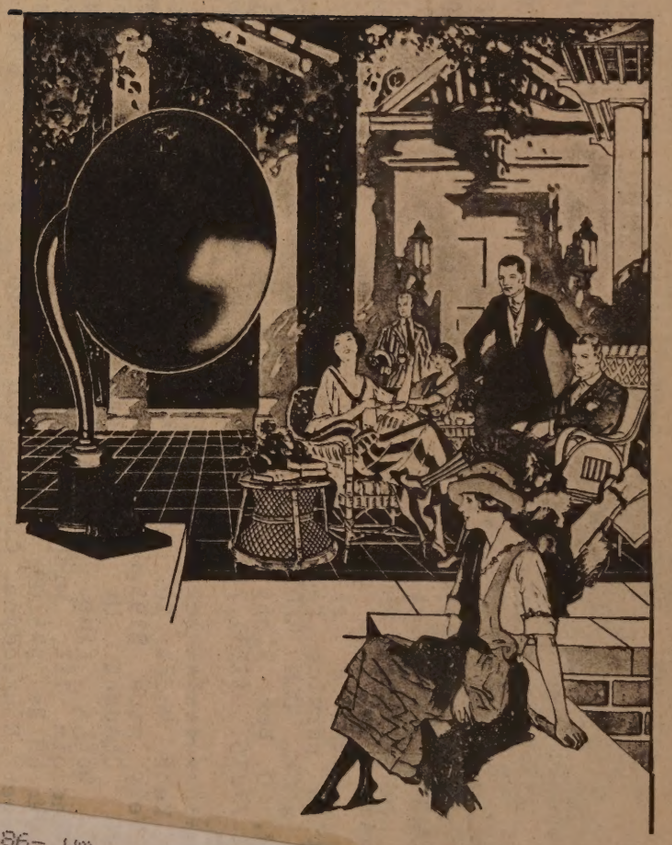

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